REMARKS

Claims 1 and 4-15 are all the claims pending in the application.

I. Response to Rejection under 35 U.S.C. §§ 102(e)/103(a)

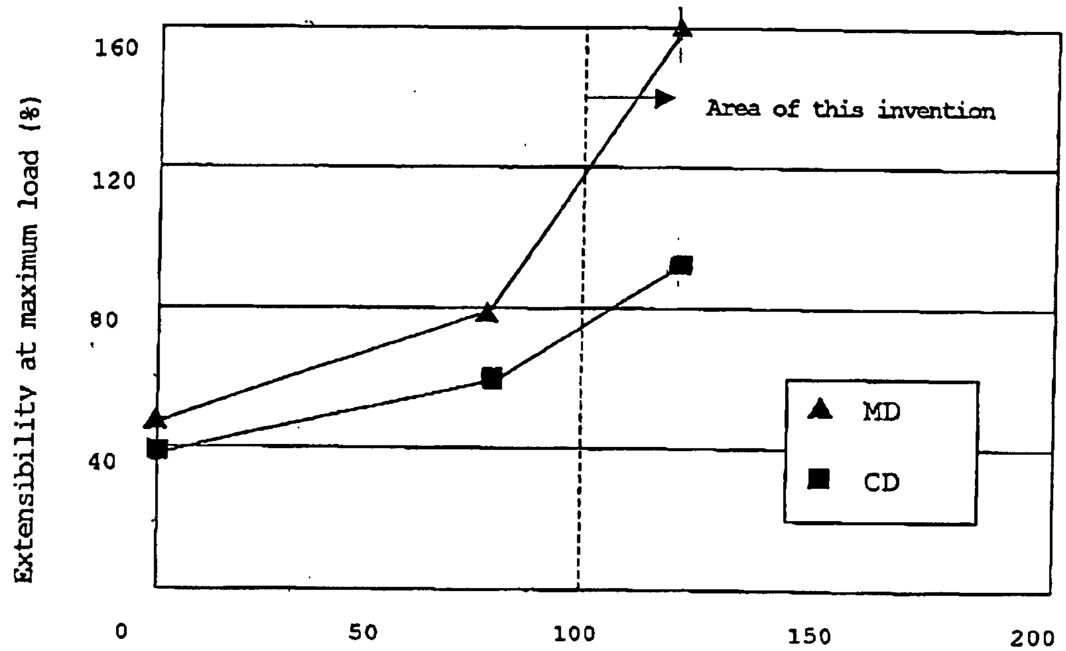
Claims 1 and 4-15 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,723,669 to Clark et al. for the reasons set forth in paragraph 2 of the Office Action.

Applicants respectfully traverse the rejection for the following reasons.

The present claims relate to a spunbonded non-woven fabric, which comprises a fiber comprising at least two olefin-based polymers, said polymers being of the same kind and having a difference between induction periods of strain-induced crystallization (SIC) of 100 seconds or longer.

The presently claimed spunbonded non-woven fabric can exhibit excellent extensibility, as demonstrated by the examples of the specification. In this regard, extensibility at maximum load (Y-axis) was plotted against difference of SIC induction period (X-axis) using the data obtained in Examples 5 and 8, and Comparative Example 2 of the present specification (summarized below):

Sample	Comparative Example 2	Example 8	Example 5
A difference of SIC induction period (sec)	0	80	120
Extensibility at maximum load, MD (%)	47	80	157
Extensibility at maximum load , CD (%)	39	60	92



Difference of SIC induction period (second)

From the above figure, it is clear that fibers produced with a spunbonded process by using a combination of polymers having a specific property regarding SIC induction period, show enhanced extensibility.

The Examiner contends that a sheath-core bicomponent fiber such as those described by Clark et al. will produce a fairly symmetrical cross-section fiber. Applicants respectfully disagree for the following reason.

The sheath-core bicomponent fiber disclosed by Clark et al. is not a symmetrical cross-section fiber; rather, it is an eccentric sheath-core arrangement (See Fig. 4B of Clark et al.). Clark et al. also discloses a side-by-side arrangement which does not have a symmetric cross-section (See, Fig. 4A of Clark et al.) (See, also, Fig. 3(b) in the present specification).

Applicants submit the following explanation.

Difference between a meltblown process and a spunbonded process

The Examiner pointed out that Clark et al. indicates a spunbonded fiber comprising one of the components of the multi-component meltblown fabric. It should be noted, however, the physical properties of non-woven fabrics obtained by a meltblown process and a spunbonded process are clearly different. As evidence of this point, attached hereto are pages 58 to 61 of the "Handbook of Textiles" (2nd edition, published on April 15, 1999), which include descriptions regarding processes for production of non-woven fabric, including a spunbonded process and a meltblown process. Regarding a meltblown process, there is the following description:

> A fiber strength is low, i.e., 1 to 2 gf/D or lower. A monofilament fiber is hard to be sampled, since a diameter of fibers in a non-woven fabric are extremely small and they are tangled with each other or partly fusion bonded. The main reason attributed to the fact that most of the fibers are fine at a high temperature molten state and that it is difficult to obtain a high degree of molecular orientation is due to a low degree of polymerization. The obtained web has a stable morphology due to an entanglement of ultra fine fibers and a partial fusion bonding. To enhance the strength of a non-woven fabric, embossing adhesion etc. are sometimes applied. However, the enhanced strength of the non-woven fabric is about one half of that of a spunbonded non-woven fabric comprising fibers obtained by a conventional spinned fibers. It has been realized that a spunbonded non-woven fabric has an improved strength compared to a meltblown non-woven fabric.
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> Page 60, right column, lines 20 to 31.

In addition, regarding a spunbonded process, there is the following description:

> When air pressure becomes high, the pulling force becomes high as well as the maximum taking up rate of fibers at a constant discharge rate. The maximum taking up rate can reach at an order of 5000 m/min, which is in a region of so-called high speed spinning. The fibers are briefly orientationally crystallized and have a low thermal shrinkage, thereby forming a web excellent in thermal stability. When a discharge rate becomes low at a constant

air pressure, the taking up rate of the fibers becomes high.
As a result, finer denier fibers are obtained.

Page 58, right column, lines 2 to 9.

Regarding extensibility of non-woven fabric, generally speaking, a fiber having a lower degree of crystallinity is more extensible than a fiber having a higher degree of crystallinity. In a melt-spinning process, a fiber having a higher degree of molecular orientation gives a fiber having a higher degree of crystallinity. On the other hand, in a meltblown process, as described above, a degree of molecular orientation is generally low, so it is expected that a degree of orientation crystallization is low and extensibility is high.

In Example 4 of Clark et al., the fiber, which was obtained by a meltblown process, had an index of extensibility of merely 56% in the machine direction (MD) and 83% in the cross-direction (CD), respectively. It can be reasonably concluded that in Example 4 of Clark et al., crystallization occurred without molecular orientation in a meltblown process.

On the other hand, a degree of crystallinity of a fiber obtained in a conventional spunbonded process is high due to molecular orientation, since a fiber is easy to be orientationally crystallized as described above. As a result, the strength of the fiber is high; however, the extensibility is relatively low as shown in Comparative Examples of the present specification (Tables 4 and 5).

In one embodiment of the present invention, enhanced extensibility without impairing characteristics of a spunbonded process can be achieved by preparing a concentric sheath-core type non-woven spunbonded fabric with polymers, which are the same kind and have a difference between induction periods of strain-induced crystallization of 100 seconds or longer, which relates to orientation crystallinity. Such process can provide both characteristics of a spunbonded process and enhanced extensibility due to a low degree of

crystallinity, and is different from a meltblown process and a conventional spunbonded process.

Description of Clark et al.

In view of the above, even if, *arguendo*, one skilled in the art were taught by the description of Clark et al. to prepare a non-woven fabric by a spunbonded process, it still would not lead those of ordinary skill in the art to a bicomponent fiber having high extensibility.

As pointed out above, Clark et al. does not disclose a bicomponent fiber having the features of the present invention. Clark et al. discloses a side-by-side type in Fig. 4A, which is not a conjugate fiber having a cross section with a center point and points (a) and (b), wherein points (a) and (b) are symmetric about the center point and the compositions at points (a) and (b) are the same (comparing Fig. 4A in Clark et al. with Fig. 2 and Fig. 3(a) of the present specification).

Clark et al. also discloses an eccentric sheath-core fiber in Fig. 4B, which has an eccentric cross-section and is different from the presently claimed fiber.

Further, Applicants submit herewith a Declaration which demonstrates that spinning could not be conducted with a sheath-core fiber having an eccentric cross section, as described in Clark et al. Specifically, in the Declaration, Additional Experiment was the same as Example 1 in the specification of the above-identified application, except the sheath-core fiber had an eccentric cross section. Additional Experiment corresponds to the fiber described in Clark et al. The fibers in Additional Experiment and Example 1 were tested in terms of spinning. The results show that Example 1 was excellent in spinning, whereas in Additional Experiment, spinning could not be conducted due to frequent breakage of the fiber just below a nozzle. For at least this reason, a bicomponent fiber cannot be obtained by the process described in Clark et al.

In view of the foregoing, Applicants respectfully submit that Clark et al. does not disclose or suggest a fiber produced by a spunbonded process as recited in the present claims, let alone the excellent extensibility thereof. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

II. <u>Conclusion</u>

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (202) 452-7932 at his earliest convenience.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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